

# Getting it Done-

## *Project Management, Documentation, and Delivery*

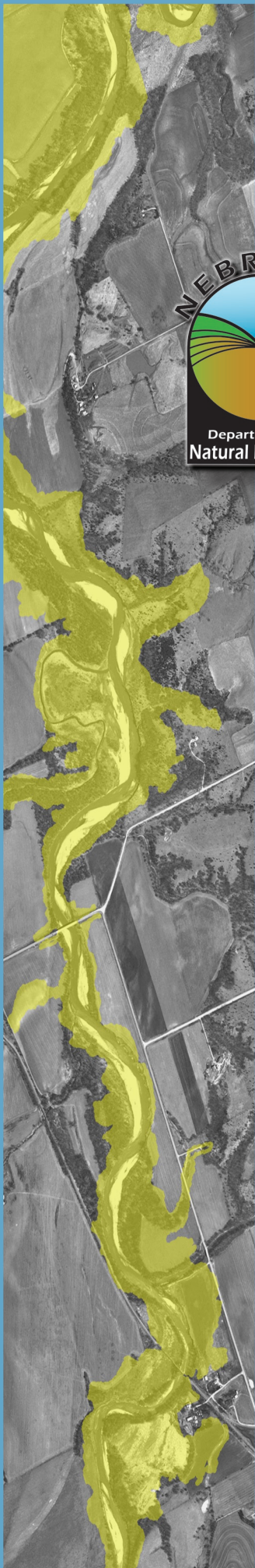
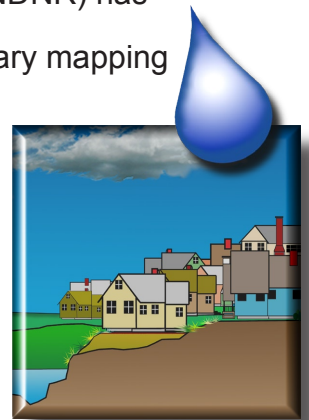
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## Introduction

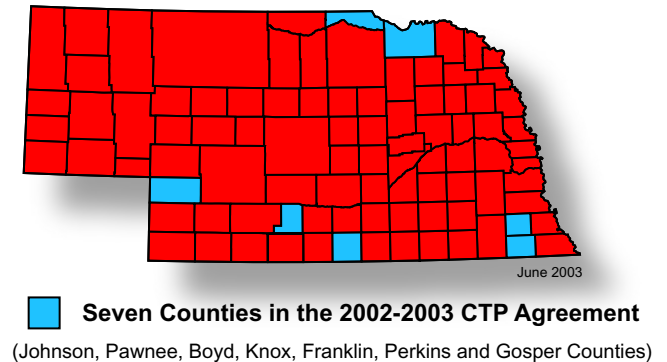
The **Nebraska Department of Natural Resources** (NDNR) has developed extremely efficient and cost-effective flood boundary mapping methods. The hydrology and hydraulics are relatively simple and well understood within the floodplain mapping community. However, an efficient mapping process is only part of what's required for the timely completion and delivery of a useful report. It is necessary to carefully plan out and manage a mapping project in order to complete mapping and reporting within the performance period, and within the tight budget specified.

From data collection and community involvement to study submission, the mapping of Approximate Zone A floodplains in Nebraska includes 30 separate tasks per project. Approximately half the tasks must be performed in sequence, and any delays along the way have a cascading (and nonlinear) effect on subsequent tasks. Through trial and error, we have found that effective project management and communication between task leaders is key to efficient mapping and report production. The NDNR has developed a workflow management process linked to the documentation and data storage process that enables timely delivery of studies that are in compliance with the mapping guidelines from the Federal Emergency Management Agency (FEMA, 2002).



# Overview of the Mapping Process

For the **seven counties included** in the 2002-2003 Nebraska CTP (Cooperating Technical Partners) agreement, there are 210 tasks headed by thirteen task leaders, including experienced engineers, surveyors, GIS systems professionals, and floodplain management specialists. The tasks are divided into **four sections: community contacts, survey and development of topographic data, mapping, and publication.**



There are **five community contacts tasks**: **1)** letters to communities, **2)** phone calls to communities, **3)** meetings with local administrators, including a FEMA final meeting, **4)** meetings with local natural resources districts, and **5)** additional phone calls, if necessary.

NDNR performs **limited surveying**. Existing digital elevation data (from USGS 7.5-minute quadrangle maps) is used for flood stage and water surface elevation calculations. However, elevations in selected communities are surveyed for the purpose of accurately delineating flood boundaries.

There are **eight mapping tasks**: **1)** create base grids, **2)** identify streams to be mapped, **3)** create tagged vector contour network, **4)** generate digitized stream network, **5)** create cross-sections and calculate discharge and flood elevation, **6)** delineate flood zones, **7)** edit flood zones, and **8)** publish maps (Shafer and Williams, 2003)

Work maps are published in an electronic Arc Reader (.pmf) format, along with a Technical Support Data Notebook (TSDN).



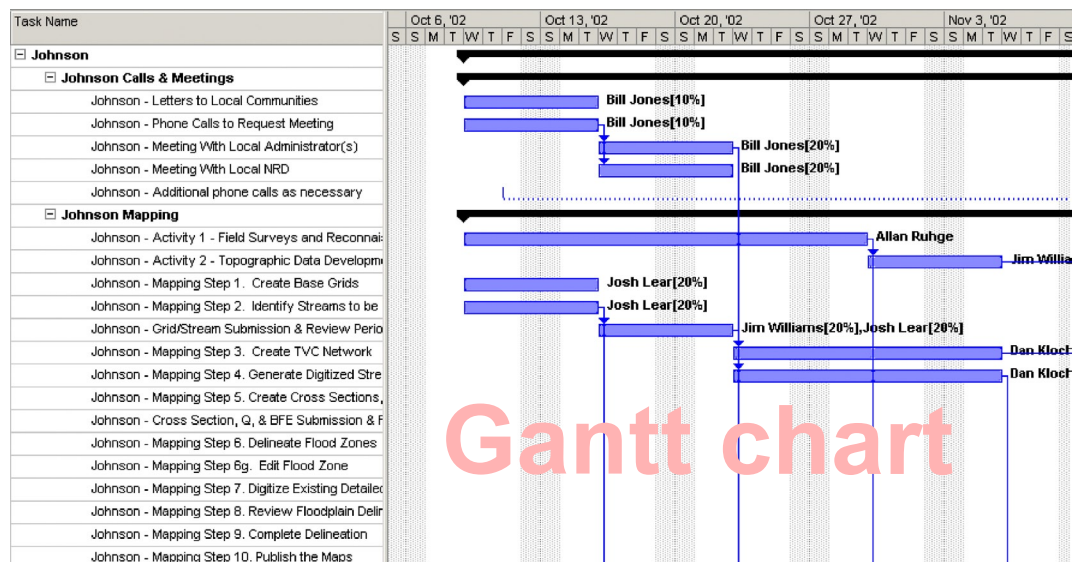
# Project Management Tools

The **four project management tools** utilized for the Nebraska CTP projects are **1)** workflow outline memos, **2)** Gantt charts, **3)** project tracking tables, and **4)** monthly meetings.

At the beginning of each project, team members discuss steps of the mapping process in a kickoff meeting. It is critical that each team member buys into the process and understands how their part interfaces with other mapping steps. Most of the team is available for this project only 10% to 50% of the time, and only during selected weeks, depending on their other duties. Therefore, it is important to estimate the total number of hours for each task, and the number of weeks required to complete the task.

Based on results from the kickoff meeting, a memo is distributed with proposed file locations, file types, and the names of approximately two dozen files associated with each project. The workflow outline memo clearly sets expectations for each mapping step. Team members have not completed their tasks until the correct file has been stored on the designated archive server with the proper name and metadata.

Using standard Microsoft® software, the NDNR utilizes tables and **Gantt charts** to manage workflow. The tasks identified during the kickoff meeting are loaded into Microsoft Project®, and an optimum workflow path is defined based on team member availability. The resulting Gantt chart is plotted and discussed during the next monthly mapping meeting. The Gantt chart is posted so that team members can graphically see the proposed work flow for the project (a sample of the Gantt chart is shown below).



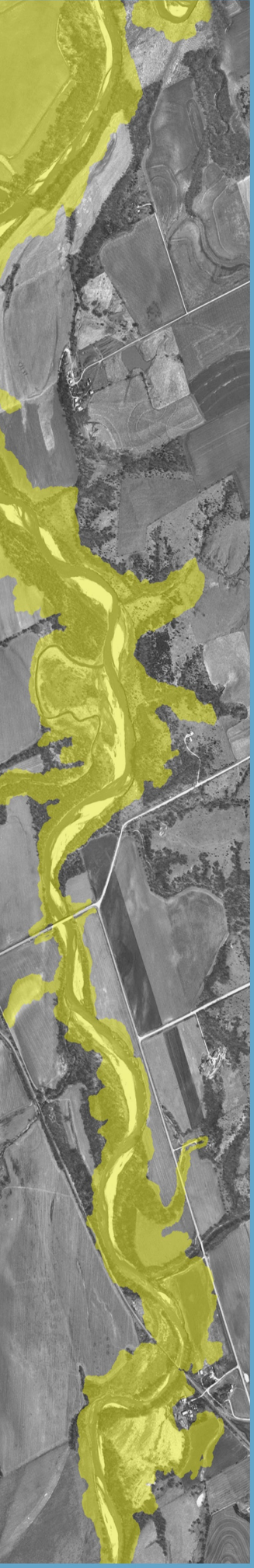


Based on the process flow derived from the Gantt chart, individual mapping tasks and the task leader responsible for each task are tabulated in an Excel® spreadsheet. This project-tracking table is laid out showing subtasks for community contacts, surveying, mapping, and reporting activities (a sample of the table is shown below). The spreadsheet references appropriate sections of the TSDN. Sections of the spreadsheet are color-coded, based on the general category of each mapping activity. When tasks are completed, the project manager changes the cell background color and records the completion date. An updated 11" by 17" copy of the tracking table is distributed at each monthly meeting.

The mapping project manager meets with each task leader at random intervals ranging from daily to biweekly and tracks the mapping progress

A		B		C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1		CTP Project Tracking Table																	
2		2002 - 2003																	
3		Nebraska Department of Natural Resources																	
4																			
5	Item	Activity No.; Mapping Steps	Task Leader	Applicable Section(s) of TSDN to be completed	Johnson County	Pawnee County	Boyd County	Knox County	Franklin County	Perkins County	Gosper County								
6					Projected	Actual	Projected	Actual	Projected	Actual	Projected	Actual	Projected	Actual	Projected	Actual	Projected	Actual	Projected
7	Communication w/ Local Officials	Letters to Local Communities	Bill	Section I, Figure M-4 (Contact Reports Index)	10/15/02	Oct-02	10/15/02	Oct-02	11/5/02	Oct-02	11/5/02	Oct-02	11/19/02	Oct-02	12/3/02	Oct-02	12/17/02	Oct-02	12/17/02
		Phone Calls to Request Meeting	Bill	Section I, Figure M-4 (Contact Reports Index)	10/15/02	Nov-02	10/15/02	Nov-02	11/5/02	Jan-03	11/5/02	Jan-03	11/19/02	Jan-03	12/3/02	Jan-03	12/17/02	Jan-03	12/17/02
		Meeting With Local Administrator(s)	Bill	Section I, Figure M-5 (Meeting Minutes/Report Index)	10/22/02	Nov-02	10/29/02	Nov-02	11/12/02	Jan-03	11/12/02	Jan-03	11/26/02	Jan-03	12/10/02	Jan-03	12/24/02	Jan-03	12/24/02
		Meeting With Local NRD	Bill	Section I, Figure M-4 (Contact Reports Index)	3/15/03		3/15/03		3/15/03		3/15/03		3/15/03		3/15/03		3/15/03		3/15/03
		Additional phone calls as necessary	Bill	Section I, Figure M-4 (Contact Reports Index)															
			Bill	Section III, Paragraph 1.3 (Draft FIS - Coordination)															
15	Survey & Topo	Activity 1 - Field Surveys and Reconnaissance	Jim	Preparation & Identifying Survey Cross Section Location	10/15/02	Jan-03	10/15/02	Jan-03	10/22/02	Oct-02	11/5/02	Oct-02	11/19/02	Mar-03	12/3/02	Jan-03	12/17/02	Oct-02	12/17/02
			Al	Field Surveys	10/29/02	Jan-03	11/19/02	Jan-03	12/10/02	Nov-02	12/31/02	Nov-02	1/21/03	Mar-03	2/11/03	Jan-03	3/4/03	Oct-02	12/17/02
			Jim	Section IV-A (Mapping Information)	11/5/02	Mar-03	11/26/02	Mar-03	12/17/02	Mar-03	1/7/03	Mar-03	1/28/03	Mar-03	2/18/03	Mar-03	3/11/03	Sep-02	12/17/02
16		Activity 2 - Topographic Data Development	Jim	Section IV - B (Mapping Information)	11/5/02	Mar-03	11/26/02	Mar-03	12/17/02	Mar-03	1/7/03	Mar-03	1/28/03	Mar-03	2/18/03	Mar-03	3/11/03	Sep-02	12/17/02
17	Mapping	Mapping Step 1. Create Base Grids	Josh		10/15/02	Oct-02	10/22/02	Oct-02	11/5/02	Oct-02	11/12/02	Oct-02	12/18/02	Oct-02	1/7/03	Oct-02	12/17/02	Oct-02	12/17/02
18		Mapping Step 2. Identify Streams to be Mapped	Josh		10/15/02	Oct-02	10/22/02	Oct-02	11/5/02	Oct-02	11/12/02	Oct-02	12/18/02	Oct-02	1/7/03	Oct-02	12/17/02	Oct-02	12/17/02
19		Grid/Stream Submission & Review Period	Josh		10/22/02	Oct-02	10/29/02	Oct-02	11/12/02	Oct-02	11/19/02	Oct-02	12/25/02	Oct-02	1/14/03	Oct-02	1/28/03	Oct-02	1/28/03
20		Mapping Step 3. Create TVC Network	Dan		11/5/02	Oct-02	11/19/02	Oct-02	10/22/02	Oct-02	10/22/02	Oct-02	2/25/03	Feb-03	4/15/03		6/3/03		6/3/03
21		Mapping Step 4. Generate Digitized Stream Network	Dan		11/5/02	Oct-02	11/19/02	Oct-02	10/22/02	Oct-02	10/22/02	Oct-02	2/25/03	Feb-03	4/15/03		6/3/03		6/3/03
22		Mapping Step 5. Create X-Sections, Calculate Q & BFE	Shuhai		12/3/02	Nov-02	12/3/02	Nov-02	11/5/02	Nov-02	11/5/02	Nov-02	3/11/03	Mar-03	4/29/03		6/17/03		6/17/03
23		Cross Section, Q, & BFE Submission & Review Period	Shuhai		12/10/02	Jan-03	12/10/02	Jan-03	11/12/02	Jan-03	11/12/02	Jan-03	3/18/03	Mar-03	5/6/03		6/24/03		6/24/03
24		Mapping Step 6. Delineate Flood Zones	Jim		12/17/02	Jan-03	12/17/02	Jan-03	11/19/02	Jan-03	11/19/02	Jan-03	3/25/03	Mar-03	5/13/03		7/1/03		7/1/03
25		Mapping Step 6g. Edit Flood Zone	Dan		12/24/02	Mar-03	12/31/02	Mar-03	2/14/03		2/14/03		4/1/03		5/20/03		7/8/03		7/8/03
26		Mapping Step 7. Digitize Existing Detailed Floodplain Info.	Dan		12/3/02	Oct-02	12/17/02	Oct-02	1/28/03	Oct-02	1/14/03	Oct-02	3/11/03	Oct-02	4/29/03	Oct-02	6/17/03	Oct-02	6/17/03
27		Mapping Step 8. Review Floodplain Delineation	Bill		12/31/02	Apr-03	1/7/02	Apr-03	2/11/03		1/21/03		4/1/03		5/27/03		7/15/03		7/15/03
28		Mapping Step 9. Complete Delineation	Kevin		1/7/03	Apr-03	1/14/02	Apr-03	2/18/03		2/18/03		4/8/03		6/3/03		7/22/03		7/22/03
29		Mapping Step 10. Publish the Maps	Kevin		1/28/03		1/28/03		3/4/03		3/18/03		4/22/03		6/17/03		8/5/03		8/5/03
30	Publication	Activity 10 - Base Map Acquisition and Preparation	Kevin	Section IV-D (Mapping Information)	10/15/02	Nov-02	10/22/02	Nov-02	10/29/02	Nov-02	11/5/02	Nov-02	11/12/02	Nov-02	11/19/02	Nov-02	11/26/02	Nov-02	11/26/02
31		Activity 4 - Hydrology	Jim	Section II - A (Hydrologic and Hydraulic Information)	12/11/02	Mar-03	12/12/02	Mar-03	2/27/03	Mar-03	2/27/03	Mar-03	3/20/03	Mar-03	6/5/03		6/26/03		6/26/03
32			Jim	Section II, Figure M-6 (Hydrologic Analyses Index)															
33		Activity 5 - Hydraulic Analyses	Jim	Section II - A (Hydrologic and Hydraulic Information)	12/13/02	Mar-03	12/12/02	Mar-03	2/27/03	Mar-03	2/27/03	Mar-03	3/20/03	Mar-03	6/5/03		6/26/03		6/26/03
34			Jim	Section II, Figure M-7 (Hydraulic Analyses Index)															
35			Jim	Section II, Figure M-8 (Key to Cross Section Labeling)															
36		Activity 8B - Floodplain Mapping (Refinement or Creation of Zone A)	Jim	Section IV-C (Mapping Information)	11/10/03	Mar-03	12/12/02	Mar-03	2/27/03	Mar-03	2/27/03	Mar-03	3/20/03	Mar-03	6/5/03		6/26/03		6/26/03
37			Jim	Section IV, Figure M-10 (Mapping Information Index)															
38		Gather existing data and historic flood information	Brian	Section III-Paragraphs 2.3, 2.4, and 7.6 (Draft FIS)	10/15/02	Oct-02	10/22/02	Oct-02	10/29/02	Oct-02	11/5/02	Oct-02	11/12/02	Nov-02	11/19/02	Nov-02	11/26/02	Nov-02	11/26/02
39		Special Problem Reports	Jim	Section I, Figure M-2 (Special Problem Report Index)	9/30/03	Mar-03	9/30/03	Mar-03	9/30/03	Mar-03	9/30/03	Mar-03	9/30/03	Mar-03	9/30/03		9/30/03		9/30/03
40			Jim	Section I, Figure M-3 (Special Problem Report Form)															
41		Burn CDs and create ReadMe.doc file	Kevin	Section IV-D (Mapping Information)	1/29/03		2/11/03		3/25/03		4/1/03		4/29/03		6/24/03		8/12/03		8/12/03
42		DNR Cover Page, CD Covers, and CD Labels	Terry		2/11/03	Mar-03	2/18/03	Mar-03	4/1/03	Mar-03	4/8/03	Mar-03	5/6/03		7/1/03		8/19/03		8/19/03
43		Report Completion	Jim	TSDN Cover Page	2/18/03		2/25/03		4/8/03		4/15/03		5/13/03		7/8/03		8/26/03		8/26/03
44		Meeting with Community to Discuss Maps	Bill		3/4/03		3/11/03		4/22/03		4/29/03		5/7/03		7/22/03		9/9/03		9/9/03





on an ongoing basis. However, it is still important to schedule monthly meetings for the following reasons: **1)** Each team member gets an overview of the whole project, **2)** Senior managers within the Department of Natural Resources are quickly brought up to speed on the progress of the project, **3)** The whole team is able to brainstorm solutions for potential problem areas and apply lessons learned to subsequent parts of the project, and **4)** It provides a forum for publicly thanking and rewarding team members and for celebrating progress made.

## Summary

The production of floodplain maps on time and within budget requires careful planning at the beginning of the project and coordination among mapping team members during the project. Problems and delays need to be quickly identified so that the team can readjust and get back on schedule. The end product is a floodplain study that is well documented, has the support of the local communities, and is in a deliverable form that minimizes the time needed by FEMA for review and publication.

## References

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Federal Emergency Management Agency. 2002. Guidelines and Specifications for Flood Hazard Mapping Partners. Washington, D.C.: Federal Emergency Management Agency

Shafer, Jeff and James Williams. 2003. Breaking the 5-Mile Per Hour Barrier: Automated Mapping Using a Normal Depth Calculation. Lincoln, Nebraska: Nebraska Department of Natural Resources.